DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention is excellent in pliability especially about a laminated nonwoven fabric which laminated the nonwoven fabric which consists of polyester system super-thin textiles, and the nonwoven fabric which consists of polyester system continuous glass fiber, and was unified, and a manufacturing method for the same, and. Highly, tensile strength and interlaminar-peeling strength have good filter performance, and are related with a laminated nonwoven fabric which can be used for the extensive uses medical science and hygienic goods, the object for garments, the object for life relative materials, for industrial materials, etc., and a manufacturing method for the same.
[0002]
[Description of the Prior Art]Conventionally, laminating a super-thin fiber nonwoven fabric and a continuous glass fiber nonwoven fabric, and unifying is carried out widely. This laminate integration is performed mainly from the following reasons. that is, since a super-thin fiber nonwoven fabric is an accumulation object of super-thin textiles, it excels in filter property (say that fine dust can be removed.) -- on the other hand, it is inferior to mechanical properties, such as tensile strength. On the other hand, since a continuous glass fiber nonwoven fabric is a thing which it comes to pile up the continuous glass fiber which generally has larger fineness than the fineness of super-thin textiles, it is excellent in mechanical properties, such as tensile strength. Therefore, in order to obtain the nonwoven fabric which has simultaneously the character to excel in filter property and to excel in the mechanical property, laminate integration of a super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric is carried out.
[0003]In order to carry out laminate integration of a super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric, the method like the following is adopted. For example,

by giving needle punch, after laminating (1) both nonwoven fabrics, Make super-thin textiles and continuous glass fiber confound, and after laminating the method and (2) both the nonwoven fabrics to unify, a high-pressure-water style is given, Super-thin textiles and continuous glass fiber are made to confound, after laminating the method and (3) both the nonwoven fabrics to unify, heat is given to a fixed zone, in the super-thin textiles and/or continuous glass fiber which exist in the zone, carry out melting, super-thin textiles and continuous glass fiber are made to weld, and softening or the method of unifying is adopted.
[0004]However, since the method of (1) is what makes super-thin textiles and continuous glass fiber exercise for handling (thickness direction of a nonwoven fabric) of a needle, and twines them mutually with a needle needle, When there was little the super-thin fiber volume or the amount of continuous glass fibers per unit area, both textiles were not easily caught in the needle needle, and there was a grudge of the ability not to make both textiles fully confound. Therefore, when the super-thin fiber nonwoven fabric or continuous glass fiber nonwoven fabric of low eyes was used, the high laminated nonwoven fabric of interlaminar-peeling strength was not able to be obtained. Since the method of (2) is what super-thin textiles and continuous glass fiber are made to exercise, and is mutually twined by a high-pressure-water style, it is hard to produce a fault when the super-thin fiber volume or the amount of continuous glass fibers per unit area uses a needle needle at least. However, conversely, when there was much the super-thin fiber volume or the amount of continuous glass fibers per unit area, there was a grudge that the pressure of a high-pressure-water style was not enough transmitted even to an inside. Therefore, when a super-thin fiber nonwoven fabric or a continuous glass fiber nonwoven fabric with high is used, the high laminated nonwoven fabric of interlaminar-peeling strength can be obtained, and it is ******. In the case of the method of of (1) and (2), since it was a thing which make super-thin textiles etc. exercise for the thickness direction of nonwoven fabrics, such as handling of a needle needle, and it is made to arrange, there was a thing made to confound between the layers of a laminated nonwoven fabric firmly that the fiber density of a laminated nonwoven fabric would become high gradually if it is like. Therefore, there was a fault of breathability having become poor and becoming a laminated nonwoven fabric which cannot be used as a filter material. Since super-thin textiles had low tensile strength, when it hooked on a needle needle, or when load of the high water pressure was carried out by the high-pressure-water style, they were cut and also had the fault of dropping out out of a laminated nonwoven fabric.
[0005]Since it is such, the above-mentioned method of (3) is generally considered to be desirable to use a laminated nonwoven fabric as a filter material. When adopting this method, the textiles which constitute a super-thin fiber nonwoven fabric, and the continuous glass fiber which constitutes a continuous glass fiber nonwoven fabric generally needed to be of the same kind. It is because compatibility is bad in their being different-species textiles, firm weld cannot

be aimed at but a super-thin fiber nonwoven fabric and a continuous glass fiber nonwoven fabric exfoliate easily. Therefore, for example, it is performed that each adopts polypropylene system textiles as both textiles. However, when you were going to make it weld polypropylene system super-thin textiles and polypropylene system continuous glass fiber, it might be said that a super-thin fiber nonwoven fabric contracted, or super-thin textiles softened or fused also in the zone which has not given heat. When the super-thin fiber nonwoven fabric contracted, a size with a continuous glass fiber nonwoven fabric stops having agreed, and there was a fault that a crimp and a wrinkle occurred in a laminated nonwoven fabric. In the zone which has not given heat, when super-thin textiles softened or fused, there was a fault of super-thin textiles welding on the whole, and breathability becoming poor, and being a laminated nonwoven fabric which cannot be used as a filter material. In the case of polypropylene system super-thin textiles, this is considered to be, since degradation of a thermal property is remarkable.
[0006]For this reason, using comparatively the polyester polymer in which a thermal property does not deteriorate easily is proposed. Namely, laminate the super-thin fiber nonwoven fabric which consists of polyester super-thin textiles, and the continuous glass fiber nonwoven fabric which consists of polyester filaments, and heat is given to a fixed zone, Softening or the method of carrying out melting, making super-thin textiles and continuous glass fiber weld, and pasting both nonwoven fabrics together is considered in the polyester super-thin textiles and the polyester filament which exist in the zone. However, although polyester super-thin textiles had little degradation of a thermal property, they had the fault that pliability peculiar to super-thin textiles was missing. Therefore, the pliability of what can paste together that it is good and firmly a super-thin fiber nonwoven fabric and a continuous glass fiber nonwoven fabric was missing, and there was a fault that only the hard laminated nonwoven fabric of a hand was obtained.
[0007]
[Problem(s) to be Solved by the Invention]Then, when that to which the polyester polymer which is excellent in a thermal property is unevenly distributed in the sheath, and the polypropylene system polymer which is excellent in pliability is unevenly distributed in the core part is used for this invention as super-thin textiles, Weld to a polyester system continuous glass fiber nonwoven fabric firmly, and it is pasted together by high exfoliation strength, and it excels in pliability and the good laminated nonwoven fabric of a hand will be provided.
[0008]
[Means for Solving the Problem]Namely, a super-thin fiber nonwoven fabric in which it comes to accumulate polyester system super-thin textiles with a fineness of 0.7 denier or less as for this invention, It is a laminated nonwoven fabric in which it comes to paste together a continuous glass fiber nonwoven fabric in which it comes to accumulate polyester system continuous glass fiber with larger fineness than fineness of these polyester system super-thin

textiles, These polyester system super-thin textiles are formed with mixed resin of 70 to 95 % of the weight of polyester system polymers, and 30 to 5 % of the weight of polypropylene system polymers, and. On a cross section of these polyester system super-thin textiles, this polyester system polymer constitutes an abbreviated sheath, This polypropylene system polymer constitutes an abbreviated core part, and when these polyester system super-thin textiles and this polyester system continuous glass fiber weld in a predetermined zone, it is related with a laminated nonwoven fabric, wherein this super-thin nonwoven fabric and this continuous glass fiber nonwoven fabric are pasted together.

[0009]Mixed resin which mixed a polyester system polymer and a polypropylene system polymer is used for a super-thin fiber nonwoven fabric used by this invention, and it is obtained. As an example of a polyester system polymer, as an acid component, terephthalic acid, isophthalic acid, Aromatic dicarboxylic acid, such as phthalic acid, naphthalene 2, 6-dicarboxylic acid,Or aliphatic dicarboxylic acid, such as adipic acid and sebacic acid, and such ester species are used, As an alcohol component, ethylene glycol, a diethylene glycol, Diol compounds, such as 1 and 4-butanediol, neopentyl glycol, cyclohexane-1, 4-dimethanol, are used, and gay polyester or copolymerized polyester produced by making condense both is mentioned.In this polyester, parahydroxybenzoic acid, 5-sodium sulfo- isophthalic acid, polyalkylene glycol, pentaerythritol, bisphenol A, etc. may be added, or copolymerization may be carried out.

[0010]A crystalline polypropylene polymer mainly used as an object for fiber-forming generally as an example of a polypropylene system polymer is used. That with which a polypropylene system copolymer in which copolymerization of the ethylene ingredient was carried out 8 or less % of the weight, or this and a crystalline polypropylene polymer were mixed is also used. If heat is given when the melting point of a polypropylene system polymer will descend too much and a laminated nonwoven fabric will be obtained using an obtained super-thin fiber nonwoven fabric, if an ethylene ingredient exceeds 8 % of the weight, a tendency which becomes easy to contract will arise. When this polypropylene system polymer is used and super-thin textiles are obtained with a meltblown method, as compared with a case where the above-mentioned polyester system polymer is used, a grade of crystallization of super-thin textiles becomes high.

[0011]Arbitrary additives, such as a flatting, paints, a flame proofing agent, a deodorizer, a spray for preventing static electricity, an antioxidant, and an ultraviolet ray absorbent, may be added in the range which does not check the purpose of this invention by an above-mentioned polyester system polymer and/or a polypropylene system polymer.

[0012]When mixing a polyester system polymer and a polypropylene system polymer and obtaining mixed resin, both mixing ratio is as follows. That is, 30 to 5 % of the weight is mixed [a polyester system polymer] with 70 to 95 % of the weight for a polypropylene system

polymer. It is preferred especially that a polyester system polymer is [a polypropylene system polymer] 25 to 8 % of the weight at 75 to 92 % of the weight, and also it is most preferred that a polyester system polymer is [a polypropylene system polymer] 20 to 10 % of the weight at 80 to 90 % of the weight. Even if mixed resin is used as the mixing ratio of a polypropylene system polymer is less than 5 % of the weight, and it obtains super-thin textiles with a meltblown method, since a polypropylene system polymer is stabilized in the central part of super-thin textiles and it becomes difficult to be unevenly distributed in it, it is not desirable. On the contrary, since it will become easy to contract when a thermal property of super-thin textiles deteriorates and a laminated nonwoven fabric is obtained if the mixing ratio of a polypropylene system polymer exceeds 30 % of the weight, it is not desirable.

[0013]In this invention, this mixed resin is used and super-thin textiles are obtained with a meltblown method. Fineness of these super-thin textiles is 0.7 denier or less. Since filter performance (namely, performance which removes fine dust) will fall if fineness exceeds 0.7 denier, it is not desirable. About two or more samples, fineness of super-thin textiles computed a cross-section area from a shape dimension in an electron microscope photograph, carried out a density correction, asked for each fineness, and made the average value fineness of super-thin textiles. As for these super-thin textiles, on that cross section, a polyester system polymer constitutes an abbreviated sheath and a polypropylene system polymer constitutes an abbreviated core part. Here, that a polyester system polymer constitutes an abbreviated sheath means that a polyester system polymer is unevenly distributed near the surface of super-thin textiles exceeding the mixing ratio in mixed resin. That a polypropylene system polymer constitutes an abbreviated core part means that a polypropylene system polymer is unevenly distributed near the central part of super-thin textiles exceeding the mixing ratio in mixed resin. Thus, since super-thin textiles have sheath-core structure, though a subject raw material is a polyester system polymer, since a polypropylene system polymer is unevenly distributed in the central part, pliability is demonstrated by super-thin textiles.

[0014]According to a method like the following, super-thin textiles of such a sheath-core structure can be easily obtained, for example, in order to obtain with a meltblown method. First, a polypropylene system polymer and a polyester system polymer of a kind which were explained above are prepared. An important thing is that a ratio to a melting flow of a polypropylene system polymer prepares a thing with a melting flow of 1.5-6.0 as a polyester system polymer here. That is, it is 1.5 <=[(melting flow of polyester system polymer)/(melting flow of polypropylene system polymer)] <=6.0. It is good for setting a ratio of a melting flow to 2.0-5.5 preferably especially to set to 2.5-5.0 at best still more preferably. In this invention, a melting flow is measured by the following measuring methods. That is, using a melt indexer melting flow device, discharge quantity of melting polymer per for 10 minutes was measured on an orifice diameter of 0.4 mm, orifice length of 1.2 mm, and conditions of 2160 g of loads,

and this quantity (g) was made into a melting flow. Temperature in this case was performed by the same temperature conditions as temperature at the time of carrying out melt spinning actually. Since each melting flow of a polyester system polymer and a polypropylene system polymer can be arbitrarily adjusted by changing the kind or changing temperature of melt spinning so that clearly from this, obtaining a ratio of the above-mentioned melting flow within the limits is being able to make easily.

[0015]Relative viscosity of a polyester system polymer is set to 1.20-1.32. As for relative viscosity, it is good that it is 1.22-1.28 often [that it is 1.21-1.30 preferably] and more preferably. Here, relative viscosity of a polyester system polymer dissolves 0.5 g of samples in 100 cc of mixed solvents of a same weight ratio of phenol and ethanetetrachloride, and measures them with a conventional method on conditions with a temperature of 20 **. A tendency for a tendency for a degree of polymerization to be too low in relative viscosity of a polyester system polymer being less than 1.22, and for pelletizing of a polymer to become difficult to arise, or for tensile strength of super-thin textiles obtained to decline arises. On the contrary, if relative viscosity exceeds 1.32, a degree of polymerization is too high, according to the meltblown method, it will become easy to generate a polymer ball in respect of a spinneret, and a tendency for formation of super-thin textiles to become difficult will arise. A tendency for great energy to be needed although a flow of a polyester system polymer of a molten state is enlarged arises.

[0016]By setting a ratio of a melting flow as the above-mentioned range, and obtaining super-thin textiles with a meltblown method, a polypropylene system polymer is unevenly distributed in a core part of super-thin textiles, and on the other hand, a polyester system polymer is unevenly distributed in a sheath of super-thin textiles, and serves as super-thin textiles of abbreviated sheath-core structure. Namely, when [at which it has a ratio of such a melting flow] a polymer of immiscible nature is mixed mutually and this mixed resin is supplied to a melt spinning cap, When a polyester system polymer with a large melting flow flows through near the tube wall of a high orifice of passage resistance and a polypropylene system polymer with a small melting flow flows through a center section of the low orifice of passage resistance on the other hand, super-thin textiles with an abbreviated sheath-core type structure are obtained. Therefore, since a polyester system polymer will present structure of what is called a sea-island type where it was scattered in punctiform, into a polypropylene system polymer, without being unevenly distributed in a sheath and will not serve as an abbreviated sheath-core type structure on a cross section of super-thin textiles if a ratio of a melting flow of a polyester system polymer becomes less than 1.2, it is not desirable. On the contrary, since the spinning of it cannot be efficiently carried out although super-thin textiles of an abbreviated sheath-core type structure are obtained if a ratio of a melting flow of a polyester system polymer exceeds 2.5, it is not desirable. That is, since a melting flow of both polymers is too

different, it is generated by polymer ball in respect of a melting spinneret, or is twisted to a regurgitation line of thread, a phenomenon occurs, and spinning nature falls extremely and a uniformity ratio of illuminance of a spinning line of thread falls, it is not desirable.

[0017]By mixing 70 to 95 % of the weight of polyester system polymers and 30 to 5 % of the weight of polypropylene system polymers like the above, and spinning super-thin textiles with a well-known meltblown method conventionally, A polyester system polymer is unevenly distributed in a sheath, a core part polypropylene system polymer is unevenly distributed, and super-thin textiles of abbreviated sheath-core structure can be obtained. Therefore, if a super-thin fiber nonwoven fabric in which it comes to accumulate these super-thin textiles is laminated with a continuous glass fiber nonwoven fabric in which it comes to accumulate polyester system continuous glass fiber and heat is given to a predetermined zone, A sheath of super-thin textiles and both of polyester system continuous glass fiber soften or fuse, super-thin textiles and polyester system continuous glass fiber weld, and both nonwoven fabrics are pasted together firmly.

[0018]Under the present circumstances, since a polyester system polymer in super-thin textiles is spinning by a meltblown method, although a chain also serves as non-orientation, heat contraction does not happen easily, therefore the dimensional stability of super-thin textiles is good [a grade of crystallization is low, and], since there is little degradation of a thermal property. And since it is formed with a polypropylene system polymer with a flexible core part of super-thin textiles, the whole super-thin textiles are rich in pliability. For example, it is it that super-thin textiles are not abbreviated sheath-core structure but the sea-island type structure where polypropylene system polymers are scattered in a polyester system polymer punctiform hard to reveal the pliability of a polypropylene system polymer for the whole super-thin textiles like this invention.

[0019]Super-thin textiles with the above-mentioned abbreviated sheath-core structure are [in / since a polyester system polymer which is unevenly distributed in a sheath is what serves as a subject / this invention] polyester system super-thin textiles and nominal ****. These polyester system super-thin textiles are accumulated, and a super-thin fiber nonwoven fabric is obtained. Towing and **-izing, cooling and making [are a meltblown method, specifically spin mixed resin of a polyester system polymer and a polypropylene system polymer,] polyester system super-thin textiles form by a high-pressure-air style promptly. On a collection surface which moves this, a super-thin fiber nonwoven fabric is obtained by making it accumulate and deposit.

[0020]A super-thin fiber nonwoven fabric can also be used with the state where polyester system super-thin textiles were made to accumulate and deposit, it can perform partial pressure welding processing if needed, can raise gestalt holdout, and can also be used. Heat and/or a pressure are given to arbitrary zones of a super-thin fiber nonwoven fabric made to

accumulate and deposit, and partial pressure welding processing is performed by making polyester system super-thin textiles stick or weld. When making it weld, it is more preferred than conditions which make polyester system super-thin textiles and polyester system continuous glass fiber weld in a stage of obtaining a laminated nonwoven fabric to give heat by low temperature conditions. This is for not reducing pliability or grace of a super-thin fiber nonwoven fabric. Partial pressure welding processing can be performed by introducing into an embossing device, heat embossing fusing equipment, or an ultrasonic fusion device a super-thin fiber nonwoven fabric made to accumulate and deposit.
[0021]As for a continuous glass fiber nonwoven fabric laminated and pasted together by super-thin fiber nonwoven fabric, it comes to accumulate polyester system continuous glass fiber. A continuous glass fiber nonwoven fabric can be manufactured by a method shown below, for example. That is, conventionally, by a publicly known melt spinning method, melt spinning of the polyester system polymer is carried out, it cools more in the style of spraying using conventionally publicly known cooling systems, such as horizontal spraying and annular spraying, and polyester system continuous glass fiber is obtained. Next, generally, polyester system continuous glass fiber is introduced into air soccer, and it ******-izes and takes over so that it may become an intended size. Especially towage speed is preferred in order for the above to obtain a continuous glass fiber nonwoven fabric excellent in mechanical performance by 3500-m/above by 3000-m/. On a move deposition apparatus like a conveyor which consists of screens, opening accumulation is carried out and, generally, polyester system continuous glass fiber discharged from air soccer obtains a continuous glass fiber nonwoven fabric, after making a corona discharge region in a high voltage electric field, or a friction collision zone pass and carrying out electrification opening. A continuous glass fiber nonwoven fabric can also be used with the state where polyester system continuous glass fiber was made to accumulate, and partial pressure welding processing may be performed and used for it. A reason for performing partial pressure welding processing is reason same with performing partial pressure welding processing to a super-thin fiber nonwoven fabric, and the means as a case of a super-thin fiber nonwoven fabric by which a means of partial pressure welding processing is also the same is adopted.
[0022]Fineness of polyester system continuous glass fiber which constitutes a continuous glass fiber nonwoven fabric is larger than fineness of polyester system super-thin textiles. Since improvement in mechanical properties which are the original roles of a continuous glass fiber nonwoven fabric in a laminated nonwoven fabric, such as tensile strength, cannot be aimed at if the fineness of polyester system continuous glass fiber is smaller than fineness of polyester system super-thin textiles, it is not desirable.
[0023]An above-mentioned super-thin fiber nonwoven fabric and a continuous glass fiber nonwoven fabric are laminated, and heat is given to a predetermined zone. It is also desirable

to give a pressure with heat. As a method of giving heat and a pressure to a predetermined zone, A way an embossed roller (concavo-convex roller) and the surface which were heated let between both rollers of heat embossing fusing equipment which consists of a smooth metal roller pass, Or a method of letting between a phon of an ultrasonic fusion device which consists of an ultrasonic wave oscillator (ultrasonic oscillation horn) which oscillates an ultrasonic wave of about 20 KHZ of frequency, and a pattern roller of unevenness of the surface, and a roller pass, etc. are employable. Under the present circumstances, a part which contacted heights of an embossed roller or a pattern roller becomes a predetermined zone, polyester system super-thin textiles and polyester system continuous glass fiber weld in this zone, and a super-thin fiber nonwoven fabric and a continuous glass fiber nonwoven fabric are pasted together. A thing of gestalten with an arbitrary tip of heights of an embossed roller is adopted, for example, a thing of a gestalt of a round shape, an elliptic type, a ** type, a triangular form, T shape, # type, etc. is adopted. A tip of heights of a pattern roller may also be arbitrary, and the same round shape as an embossed roller is adopted, and also a thing used as band-like is also adopted.

[0024]Although a rate of a predetermined zone which polyester system super-thin textiles and polyester system continuous glass fiber are welding can be defined arbitrarily, it is generally preferred that it is 4 to 50% to surface area of a laminated nonwoven fabric. Since this zone is a zone where heights of an embossed roller or a pattern roller contact, it can be adjusted to this range by setting up a rate of a gross area of heights over surface area of an embossed roller or a pattern roller. It becomes a tendency whose exfoliation strength of a laminated nonwoven fabric in which there are too few zones which polyester system super-thin textiles and polyester system continuous glass fiber are welding as the percentage of a predetermined zone is less than 4%, and they are obtained does not improve. On the contrary, if a rate of a predetermined zone exceeds 50%, a tendency for the pliability of a laminated nonwoven fabric obtained to fall, or for breathability to fall will arise. A process of giving a pressure by this heat and request is good also as a process of following a manufacturing process of a super-thin fiber nonwoven fabric or a continuous glass fiber nonwoven fabric, and a laminating process, and good also as a process that a manufacturing process and a laminating process are separate. It is good also considering a process of considering it as a process separate from a manufacturing process, and giving a pressure by laminating process, heat, and request, as a continuous process.

[0025]Next, based on an example, this invention is explained more concretely. Measuring methods used in this example, such as each weighted solidity, are performed by the following methods.

[Priming contraction of a super-thin fiber nonwoven fabric]: Five test pieces of a sample width 25cm square were prepared by 25 cm of sample length, each test piece was immersed for 3

minutes into boiling water, and priming processing was performed. Area (S_2) of a test piece after priming processing was measured, and average value of a value computed with a following formula was made into priming contraction (%). S_1 is the area (25 cm x 25 cm) of a test piece before performing priming processing.
It is the value which measured the maximum tensile strength from a specimen 5 cm in width, and 10 cm in length according to a stripping method of a statement to account $[1-(S_2/S_1)]$ x100 [tensile strength of laminated nonwoven fabric]:JIS L-1096, and was converted into eyes of 100 g/m^2.
[A tensile elongation rate of a laminated nonwoven fabric]: It is the ductility at the time of cutting at the time of tensile strength measurement.
Interlaminar-peeling powerful] of [laminated nonwoven fabric: A specimen 5 cm in width and 10 cm in length was extracted from a laminated nonwoven fabric so that the length direction might turn into a lengthwise direction. Use a constant-rate-of-extension type tensile test machine, made one zipper pinch an end of a super-thin fiber nonwoven fabric in this laminated nonwoven fabric, a zipper of another side was made to pinch an end of a continuous glass fiber nonwoven fabric, and average value of a load value when it exfoliates in a part for speed-of-testing/of 10 cm was made into interlaminar-peeling strength of a laminated nonwoven fabric.
[Bending resistance of a laminated nonwoven fabric]: A specimen 5 cm in width and 10 cm in length was bent in the length direction, it was considered as cylindrical objects, and what joined between ends which contacted was made into a bending resistance test portion. Average value of a maximum load value obtained about shaft orientations (cross direction of a specimen) of this sample by compressing by a part for 5 cm of compression velocity/using a constant-rate-of-extension type tension tester was made into bending resistance of a laminated nonwoven fabric.
[Permeability of a laminated nonwoven fabric] According to the fragile method of a statement, it measured to :JIS L-1096.
[0026]
[Example]
Relative viscosity mixed 95 % of the weight of polyester system polymers (here, it is a polyethylene terephthalate polymer.) of 1.22, and 5 % of the weight of polypropylene system polymers whose melting point is 160 ** at 259 **, and the example 1 melting point obtained mixed resin. The ratio of the melting flow (measurement temperature of 370 **) of the polyester system polymer was 3.2 to the melting flow (measurement temperature of 370 **) of a polypropylene system polymer. And this mixed resin was used and the super-thin fiber nonwoven fabric of 25g/m eyes ^{2} was obtained with the meltblown method on condition of the

following. That is, temperature spun the spinning conditions of mixed resin from the spinneret so that solitary-foramen discharge quantity might become a part for 0.2g/at 370 **. As a high-pressure-air style for **[towage and]-izing the spun line of thread, the thing which made heated air with a temperature of 400 ** blow off by pressure 1.2 kg/cm^2 was used. The collection surface which the **-ized polyester system super-thin textiles are conveyed by the high-pressure-air style with a high-pressure-air style, and is accumulated was allocated in the position which is separated from a spinneret 5 cm, and considered the movement speed as a part for 8-m/.

[0027]Thus, the fineness of the polyester system super-thin textiles in the obtained super-thin fiber nonwoven fabric was 0.29 denier. When the cross section of polyester system super-thin textiles is expanded by 5000 times and observed using an electron microscope, it has an abbreviated sheath-core type structure where the polyester system polymer covered the circumference of the polypropylene system polymer filmy. Priming contraction of a super-thin fiber nonwoven fabric is 32%, and was excellent in dimensional stability.

[0028]On the other hand, relative viscosity fused the polyester system polymer (here, it is polyethylene terephthalate.) of 1.35 with the publicly known spinning machine at 259 **, and the melting point spun this from the spinneret by a part for spinning temperature [of 295 **], and 1.6g of solitary-foramen discharge quantity/. After cooling a spinning line of thread, air soccer took over the speed for 4800-m/, and it was made to open with a corona discharge opening machine. Subsequently, after making it catch and deposit on the collection surface which is located in the lower part of air soccer and which moves, this was introduced into heat embossing fusing equipment, and the continuous glass fiber nonwoven fabric of eyes 25 g/m^2 was obtained. The embossed roller allocated by heat embossing fusing equipment has heights of the letter of dispersion at a rate of 5% to a roller surface product, and temperature is set as 150 **. The fineness of the polypropylene system continuous glass fiber extracted out of the continuous glass fiber nonwoven fabric was about 3 deniers.

[0029]Subsequently, the laminated material which laminated the super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric was introduced into heat embossing fusing equipment, and the laminated nonwoven fabric of eyes 50 g/m^2 was obtained. The embossed roller allocated by heat embossing fusing equipment has heights of the letter of dispersion at a rate of 10% to a roller surface product, and temperature is set as 230 **. Thus, the laminated nonwoven fabric whose gross area of the punctiform zone where polyester system super-thin textiles and polypropylene system continuous glass fiber were welded is 10% to laminated nonwoven fabric surface area was obtained. The characteristic of this laminated nonwoven fabric was as having been shown in Table 1.

[0030]Used the mixing ratio of both the polymers in example 2 mixed resin as 85 % of the

weight of polyester system polymers, and 15 % of the weight of polypropylene system polymers, the pressure of the high-pressure-air style in a meltblown method was made into 1.4 kg/cm^2, and also the super-thin fiber nonwoven fabric was obtained like Example 1. The spinning nature at this time was good.
[0031]Thus, the fineness of the polyester system super-thin textiles in the obtained super-thin fiber nonwoven fabric was 0.18 denier. When the cross section of polyester system super-thin textiles is expanded by 5000 times and observed using an electron microscope, it has an abbreviated sheath-core type structure where the polyester system polymer covered the circumference of the polypropylene system polymer filmy. Priming contraction of a super-thin fiber nonwoven fabric is 21%, and was excellent in dimensional stability. This super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric used in Example 1 were used, and the laminated nonwoven fabric of eyes 50 g/m^2 was obtained on the same conditions as Example 1. The characteristic of this laminated nonwoven fabric was as being shown in Table 1.
[0032]Used the mixing ratio of both the polymers in example 3 mixed resin as 75 % of the weight of polyester system polymers, and 25 % of the weight of polypropylene system polymers, the pressure of the high-pressure-air style in a meltblown method was made into 1.5 kg/cm^2, and also the super-thin fiber nonwoven fabric was obtained like Example 1. The spinning nature at this time was good.
[0033]Thus, the fineness of the polyester system super-thin textiles in the obtained super-thin fiber nonwoven fabric was 0.12 denier. When the cross section of polyester system super-thin textiles is expanded by 5000 times and observed using an electron microscope, it has an abbreviated sheath-core type structure where the polyester system polymer covered the circumference of the polypropylene system polymer filmy. Priming contraction of a super-thin fiber nonwoven fabric is 15%, and was excellent in dimensional stability. This super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric used in Example 1 were used, and the laminated nonwoven fabric of eyes 50 g/m^2 was obtained on the same conditions as Example 1. The characteristic of this laminated nonwoven fabric was as being shown in Table 1.
[0034]Set the ratio of the melting flow of a polyester system polymer to that [melting] of an example 4 polypropylene-system polymer to 4.0, the pressure of the high-pressure-air style in a meltblown method was made into 1.2kg[/cm] ^{2}, and also the super-thin fiber nonwoven fabric was obtained like Example 2. The spinning nature at this time was also good.
[0035]Thus, the fineness of the polyester system super-thin textiles in the obtained super-thin fiber nonwoven fabric was 0.17 denier. When the cross section of polyester system super-thin textiles is expanded by 5000 times and observed using an electron microscope, it has an

abbreviated sheath-core type structure where the polyester system polymer covered the circumference of the polypropylene system polymer filmy. Priming contraction of a super-thin fiber nonwoven fabric is 18%, and was excellent in dimensional stability. This super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric used in Example 1 were used, and the laminated nonwoven fabric of eyes 50 g/m^2 was obtained on the same conditions as Example 1. The characteristic of this laminated nonwoven fabric was as being shown in Table 1.

[0036]It replaced with using heat embossing fusing equipment using the super-thin fiber nonwoven fabric and continuous glass fiber nonwoven fabric which were used in example 5 Example 4, the ultrasonic fusion device shown below was used, and the laminated nonwoven fabric was obtained. As for an ultrasonic fusion device, frequency consists of an ultrasonic wave oscillator (phon) of 20KHZ, and a pattern roller with which heights were provided in the shape of dispersion on the circumference.

Heights are provided at a rate of 10% to the roller surface product.

Thus, the laminated nonwoven fabric of eyes 50 g/m^2 whose gross area of the punctiform zone where polyester system super-thin textiles and polyester system continuous glass fiber were welded is 10% to laminated nonwoven fabric surface area was obtained. The characteristic of this laminated nonwoven fabric was as having been shown in Table 1.

[0037]

[Table 1]

		引張強力 (kg/5cm)	引張伸度 (%)	剝離強力(g/5cm)	剛軟度 (g)	通気度 (cc/cm2/秒)
実施例	1	21.8	54	370	47	43
	2	20.9	52	360	41	40
	3	19.8	46	370	40	38
	4	20.7	50	370	43	40
	5	18.1	41	420	32	42
比較例	1	11.9	38	240	72	91
	2	12.8	41	140	85	104
	3	24.5	56	360	47	40

[0038]Used the mixing ratio of both the polymers in comparative example 1 mixed resin as 50 % of the weight of polyester system polymers, and 50 % of the weight of polypropylene system polymers, the pressure of the high-pressure-air style in a meltblown method was made into 0.8 kg/cm^2, and also the super-thin fiber nonwoven fabric was obtained like Example 1. It was temporally generated by the polymer ball near the spinneret, and the spinning nature at this time was poor.

[0039]Thus, the fineness of the polyester system super-thin textiles in the obtained super-thin fiber nonwoven fabric was 1.09 deniers. The place which expanded the cross section of polyester system super-thin textiles by 5000 times, and observed it using the electron microscope, While what has an abbreviated sheath-core type structure where the polyester system polymer covered the circumference of the polypropylene system polymer filmy existed, what has the structure of a sea-island type where it is dotted with a polypropylene system polymer in a polyester system polymer in part existed. Priming contraction of a super-thin fiber nonwoven fabric is 24%, and is inferior to dimensional stability. This super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric used in Example 1 were used, and the laminated nonwoven fabric of eyes 50 g/m^2 was obtained on the same conditions as Example 1. The characteristic of this laminated nonwoven fabric was as being shown in Table 1.
[0040]Set the ratio of the melting flow of a polyester system polymer to that [melting] of a comparative example 2 polypropylene-system polymer to 1.0, the pressure of the high-pressure-air style in a meltblown method was made into 0.6 kg/cm^2, and also the super-thin fiber nonwoven fabric was obtained like Example 2. Since the spinning nature at this time had the small ratio of a melting flow, the thread breakage occurred and it was poor.
[0041]Thus, the fineness of the polyester system super-thin textiles in the obtained super-thin fiber nonwoven fabric was 2.01 deniers. When the cross section of polyester system super-thin textiles is expanded by 5000 times and observed using an electron microscope, a polyester system polymer and a polypropylene system polymer have the structure of a sea-island type. Priming contraction of a super-thin fiber nonwoven fabric is 54%, and is inferior to dimensional stability. This super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric used in Example 1 were used, and the laminated nonwoven fabric of eyes 50 g/m^2 was obtained on the same conditions as Example 1. The characteristic of this laminated nonwoven fabric was as being shown in Table 1.
[0042]Relative viscosity used the simple substance of the polyester system polymer (here, it is a polyethylene terephthalate polymer.) of 1.22 at 259 **, and the comparative example 3 melting point obtained the super-thin fiber nonwoven fabric of 25g/m eyes ^{2} with the meltblown method on condition of the following. That is, temperature spun the spinning conditions of the polyester system polymer from the spinneret so that solitary-foramen discharge quantity might become a part for 0.2g/at 370 **. As a high-pressure-air style for **[towage and]-izing the spun line of thread, the thing which made heated air with a temperature of 400 ** blow off by pressure 1.6 kg/cm^2 was used. The collection surface which the **-ized polyester system super-thin textiles are conveyed by the high-pressure-air style with a high-pressure-air style, and is accumulated was allocated in the position which is separated from a spinneret 5 cm, and considered the movement speed as a part for 8-m/.

[0043]Thus, the fineness of the polyester system super-thin textiles in the obtained super-thin fiber nonwoven fabric was 0.18 denier. However, priming contraction of a super-thin fiber nonwoven fabric is 84%, and is remarkably inferior to dimensional stability. This super-thin fiber nonwoven fabric and the continuous glass fiber nonwoven fabric used in Example 1 were used, and the laminated nonwoven fabric of eyes 50 g/m^2 was obtained on the same conditions as Example 1. The characteristic of this laminated nonwoven fabric was as being shown in Table 1.

[0044]On a cross section, as for the laminated nonwoven fabric concerning Examples 1-5, the polyester system polymer is unevenly distributed in the sheath so that clearly from the result of Table 1.

The super-thin fiber nonwoven fabric which becomes a core part from the polyester system super-thin textiles in which the polypropylene system polymer is unevenly distributed, Since it is a thing which laminates with the continuous glass fiber nonwoven fabric which consists of polyester system continuous glass fiber, and a polyester system polymer and polyester system continuous glass fiber weld and which comes to paste both nonwoven fabrics together, interlaminar-peeling strength is high.

[0045]On the other hand, since the super-thin fiber nonwoven fabric which consists of polyester system super-thin textiles with large fineness is being used for the laminated nonwoven fabric concerning the comparative example 1, it is inferior to pliability. Since a polypropylene system polymer exists comparatively so much in polyester system super-thin textiles, the thermal property has deteriorated, also out of the zone which gave heat, there is a tendency which super-thin textiles soften or fuse, super-thin textiles weld, and breathability is falling. Since the nonwoven fabric in which a polypropylene system polymer and a polyester system polymer consist of super-thin textiles which became the structure of the sea-island type is used, the laminated nonwoven fabric concerning the comparative example 2 is difficult to exist in super-thin textiles, after the polypropylene system polymer which is rich in pliability has continued.

Pliability is missing.

Since the super-thin fiber nonwoven fabric which consists of super-thin textiles which comprised a polyester system polymer simple substance is being used for the laminated nonwoven fabric concerning the comparative example 3, it lacks in pliability.

[0046]

[Function and Effect(s) of the Invention]The super-thin fiber nonwoven fabric in which the laminated nonwoven fabric concerning this invention consists of polyester system super-thin textiles to which a polyester system polymer is unevenly distributed in a sheath, and the polypropylene system polymer is unevenly distributed in the core part, The continuous glass

fiber nonwoven fabric which consists of polyester system continuous glass fiber is laminated, and both nonwoven fabrics are pasted together by weld with super-thin textiles and continuous glass fiber. Since the polyester system polymer which is unevenly distributed in the surface of super-thin textiles, and forms a sheath, and polyester system continuous glass fiber are of the same kind, it is good, and compatibility welds both good, softening or when it carries out melting and is made to weld. Therefore, the laminated nonwoven fabric concerning this invention does so the effect that interlaminar-peeling strength becomes very high.
[0047]Since the polypropylene system polymer which is rich in pliability forms the core part into super-thin textiles, even if the polyester system polymer which lacks in pliability comparatively forms the sheath, as the whole super-thin textiles, it is rich in pliability. Therefore, the fall of the pliability of the laminated nonwoven fabric obtained does so the effect that it is few and a hand is also good.
[0048]In the laminated nonwoven fabric concerning this invention, when the gross area of the zone which the sheath and polyester system continuous glass fiber of polyester system super-thin textiles are welding is made 4 to 50% to laminated nonwoven fabric surface area, the fall of breathability can be prevented good and it can be conveniently used as a filter material.
[0049]Since the laminated nonwoven fabric concerning this invention has the large fineness of the polyester system continuous glass fiber which constitutes the continuous glass fiber nonwoven fabric laminated by the super-thin fiber nonwoven fabric compared with super-thin textiles, A super-thin fiber nonwoven fabric with low tensile strength is covered with a continuous glass fiber nonwoven fabric with high tensile strength, and does so the effect that a laminated nonwoven fabric with tensile strength high as a whole is obtained.
[0050]In the manufacturing method of the laminated nonwoven fabric concerning this invention, In order to use mixed resin of a polypropylene system polymer and the polyester system polymer which has a melting flow of a fixed ratio to the melting flow of this polypropylene system polymer and to obtain polyester system super-thin textiles with a meltblown method, A polyester system polymer is unevenly distributed in a sheath, and a polypropylene system polymer also does so the effect that what is unevenly distributed in a core part can be efficiently obtained by good spinning nature.

[Translation done.]